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Response to office action mailed 11/10/2004

**Amendments to the Claims**

Please amend the claims as follows. This listing of the claims will replace all prior versions, and listings of claims, in the application:

- 1) (currently amended) A method of ~~making-reducing stress-induced mechanical problems in~~ optical quality components ~~having a plurality of layers with different refractive indices,~~ comprising ~~carrying out the following steps in sequence:~~
  - a) depositing silica buffer layers respectively on a front and back face of a silicon wafer by PECVD (Plasma Enhanced Chemical Vapor Deposition) to provide a first structure resistant to wafer warp during thermal processing;
  - b) ~~subjecting said first structure to a first thermal treatment to reducing~~ optical absorption and compressive stress in said buffer layers by subjecting said first structure to a first thermal treatment;
  - e)b) said first thermal treatment comprising:
    - i) decreasing compressive stress in said buffer layers from an initial compressive value by subjecting said first structure to a temperature that ramps up from a stabilization temperature to a temperature of at least 800°C to decrease compressive stress in said buffer layers from an initial compressive value;
    - ii) further decreasing compressive stress in said buffer layers and reducing optical absorption by continuing to subject said first structure to said temperature of at least 800°C for a period of at least 30 minutes to further decrease compressive stress in said buffer layers and reduce optical absorption; and
    - iii) ~~ramping down said temperature to which said first structure is subjected to a final temperature such that causing~~ said first structure to undergoes an elastic deformation wherein the compressive stress in said buffer layers increases linearly to a final compressive value that is less than said initial compressive value by ramping down said temperature to which said first structure is subjected to a final temperature;
  - d)c) depositing a silica core layer on said buffer layer on said front face of the wafer by PECVD to form a second structure; and

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- ~~d)~~ subjecting said second structure to a second thermal treatment to reduce optical absorption and tensile stress in said core layer by subjecting said second structure to a second thermal treatment, [[:]]-said second thermal treatment comprising:
- i) relieving tensile stress in said core layer from an initial tensile value by subjecting said second structure to a temperature that ramps up to a temperature of at least 600°C to relieve tensile stress in said core layer from an initial tensile value;
  - ii) reducing optical absorption by continuing to subject said second structure to a temperature of at least 600°C for a period of at least 30 minutes to reduce optical absorption; and
  - iii) ramping down said temperature to which said second structure is subjected so that causing said second structure to undergoes elastic deformation and said tensile stress in said core layer to decreasees linearly to a final tensile value that is less than said initial tensile value by ramping down said temperature to which said second structure is subjected; and
- e) depositing a cladding layer over said core layer.

2.(cancelled)

3.(cancelled)

4.(previously presented) A method as claimed in claim 1, wherein said first structure is maintained at said stabilization temperature for a period of from 1.3 to 130 minutes.

5.(previously presented) A method as claimed in claim 1, wherein said first structure is maintained at said stabilization temperature for a period of about 13 minutes.

6.(currently amended) A method as claimed in claim 3~~1~~, wherein in step e~~b~~(i) the temperature of said first structure is ramped up from said stabilization temperature to said temperature of at least 800°C at a rate lying in the range 1°C/min to 25°C/min.

7.(previously presented) A method as claimed in claim 6, wherein said rate is 5°C/min.

8.(previously presented) A method as claimed in claim 1, wherein said stabilization temperature lies in the range 300°C to 700°C.

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- 9.(previously presented) A method as claimed in claim 1, wherein said stabilization temperature is about 400°C.
- 10.(currently amended) A method as claimed in claim 8, wherein in step eb(iii) the temperature of said first structure is ramped down to said final temperature at a rate in the range 1°C/min. to 25°C/min.
- 11.(previously presented) A method as claimed in claim 10, wherein said rate is 2.5°C/min.
- 12.(currently amended) A method as claimed in claim 1, wherein in step eb(ii) the temperature of at least 800°C to which said first structure is continued to be subjected for at least 30 minutes lies in the range of 800°C to 1,300°C.
- 13.(currently amended) A method as claimed in claim 1, wherein in step eb(ii) the temperature of at least 800°C to which said first structure is continued to be subjected is 900°C.
- 14.(previously presented) A method as claimed in claim 1, wherein said first and second thermal treatments are carried out in the presence of an inert gas.
- 15.(currently amended) A method as claimed in claim ~~14~~1, wherein said first and second treatments are carried out in the presence of a inert gas is selected from the group consisting of: nitrogen, oxygen, hydrogen, water vapour, argon, fluorine, carbon tetrafluoride, nitrogen trifluoride, and hydrogen peroxide.
- 16.(previously presented) A method as claimed in claim 14, wherein said inert gas has a constant flow rate.
- 17.(previously presented) A method as claimed in claim 16, wherein said flow rate of said inert gas lies in the range 1 liter/min. to 100 liters/min.
- 18.(currently amended) A method as claimed in claim 1, wherein in step fd(ii) the temperature of at least 600°C to which said second structure is continued to be subjected lies in the range 600 to 1300°C.
- 19.(currently amended) A method as claimed in claim 18, wherein in step fd(ii) the temperature of at least 600°C to which said second structure is continued to be subjected is 900°C.

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20.(canceled)

21.(canceled)

22.(cancelled)

23.(cancelled)

24.(previously presented) A method as claimed in claim 1, wherein a protective layer is deposited on the back face of the buffer layer on the back side of the wafer and a compensating layer is deposited on the front face of the wafer.

25.(previously presented) A method as claimed in claim 24, wherein the protective layer and compensating layer are silicon nitride.

26.(cancelled)

27.(cancelled)

28. (cancelled)

29.(cancelled)

30.(cancelled)

31.(cancelled)